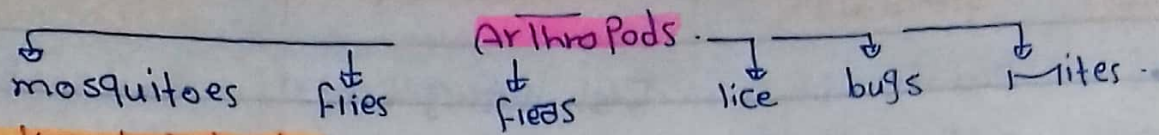


Medical Entomology :-



Medical important :-

⇒ Arthropods affect the health of man by.

1] By causing disease :-

- * Poisoning. → inoculation of Poison as Scorpion.
- * Myiasis and scabies → invasion of Tissue as Sarcophages.
- * Allergy as domestic mites.

2] By Transmission disease :-

ⓐ Mechanical Transmission :-

* indirect :- They act as passive carriers of organism on their hairs, mouth part, legs as Musca domestica.

* direct :- By inoculation without any cycle. Pick the organism from diseased person and inoculate them to healthy one as stomoxys.

ⓑ Biological Transmission.

- ✓ * Propagative :- Multiplication of organism without developmental changes as
- ✓ * cyclo Propagative :- Multiplication and developmental changes of organism as.
- ✓ * cyclo developmental :- development changes without multiplication as
- ✓ * Trans ovarian :- organism transmitted from infected mother to offspring through ova
- ✓ * Transstadial :- Transmitted stage to stage.

VISIT...

LANZAROTE
Caliente.COM

Diptera

N.B

Mosquitoes
fleas

Complete life cycle.

egg → larva → pupa → Adult

Lice
bug

incomplete life cycle.

egg → nymph → adult.

Mosquitoes

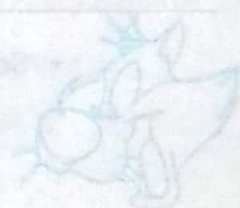
	Female Culex	Aedes	Anopheles
Medical importance	Transmission of • wuchereria bancrofti • viral encephalitis • Rift valley fever.	• yellow fever. • Dengue virus. • w. bancrofti • Rift valley fever.	• Human Malaria • w. bancrofti • viral encephalitis
Mechanism of transmission	Biological Transmission cycle developmental		biological Transmission cycle propagative.
	Nocturnal biters	Diurnal biters	Dual biters

Control :-

جلی

موت

دوا



Anopheles gambiae :-

Efficient malaria vector because?

- 1) Anthro Pophilic.
- 2) Highly domesticated.
- 3) Highly Susceptible to infection.
- 4) ^{نظام النقل} egg Resist desiccation.

اشباهة البعوض (Pseudo Mosquito)

3 Sand fly ذبابة الرمل.

"Phlebotomus"

→ Medical important (Protozoa - bacteria - Virus) + Harara

1) Transmite.

- Protozoal (leishmaniasis).
- bacteria (bartonella bacilli formis) → Bartonellosis.
- virus. → (sand fly fever or zday fever).

2) Harara ⇒ Allergic Reaction to bite of sand fly.

→ Mechanism of Transmission.

Biological Transmission. Cyclo Propagative.

3 Simulium.

- Transmit onchocerca volvulus. "Filaria"
- Black fly or coffee flies
- Breed in fast running ~~water~~ stream of water.

4) Gulicoides.

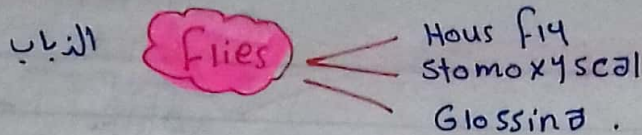
- Transmit filarial Parasite. Mansonella Perstans.
Mansonella ozzardi
- Source of light can protect against bites
- Night feeders.

5) Chrysops

- Transmit loo loo

Mechanism of Transmission.

Biological Transmission
Cyclo developmental.



ذبابة البيت [1] Hous fly (*Musca domestica*). شيق

- it Transmits.
- Micro organism causing Typhoid, Polio myelitis, and bacillary dysent
- cyst of Protozoa and egg of helminthes.
- Accidental Myiasis.

Mechanism of Transmission:-

indirect Mechanical Transmission.

N.B Mouth is sucking not bite.

ذبابة في! شيق [2] Stomoxyscal (stable fly).

- can Transmits blood Parasite as trypanosomes.
- Accidental Myiasis.
- Painful bites.
- Skin Allergy.

Mechanism of Transmission.

Direct Mechanical Transmission.

N.B Mouth is Piercing & sucking.

[3] Glossina (Tse - Tse fly).

Glossina Palpalis

- Transmits Trypanosoma brucei gambiense.
- Causes sleeping sickness in man.
- west Africa.

Glossina Morsitans.

- Transmits Trypanosoma brucei Rhodesiense.
- causes sleeping sickness in man.
- in East Africa.

Mechanism of Transmission:- biological Transmission cycle Propagative.

Myiasis

- House fly
- Stomoxys

④⁺ →

Calliphoridae

- Calliphora
- Lucilia
- Sarcophaga
- Wohlfahrtia

Metallic flies

Flesh flies

الدبابنة الفضية	Calliphora	الدبابنة الخضراء	Lucilia	Sarcophaga	Wohlfahrtia
- blue flies		Green flies		chess board pattern of abdomen	Abdomen has 9 permanent black spots in 3 lines
- Mouth sucking		Mouth sucking		causes semi-specific myiasis	
- Causes semi specific myiasis				Mouth is sucking	

House fly
Stomoxys



accidental myiasis

Calliphora

Lucilia

Sarcophaga

Wohlfahrtia

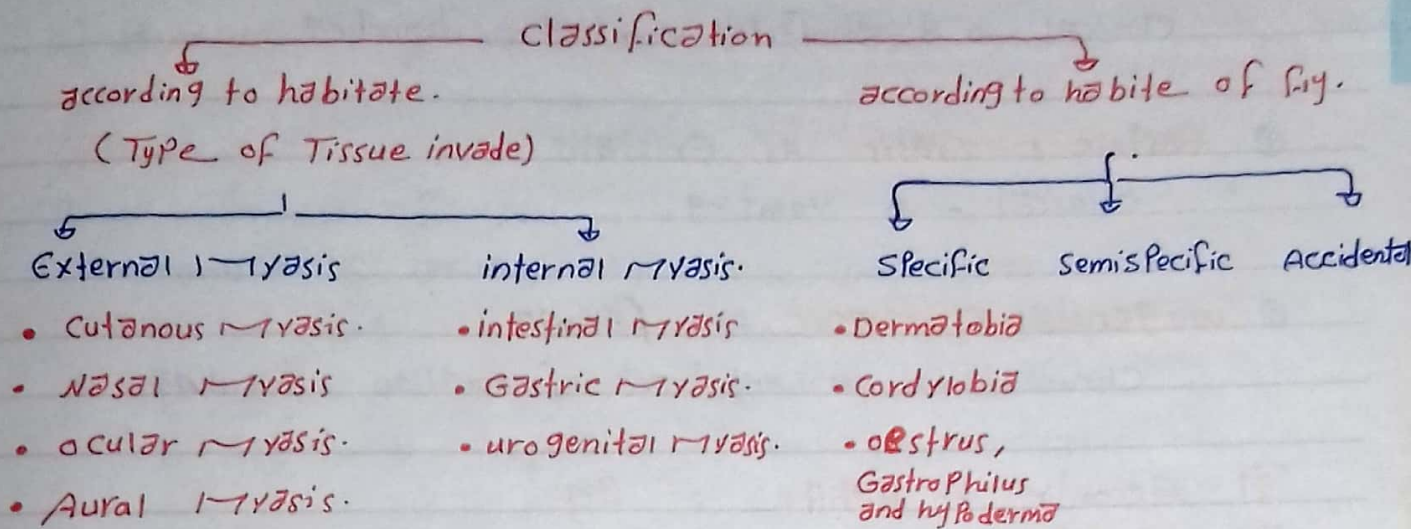


Semi specific myiasis

Myiasis

التلويذ

def:- invasion of Tissue of humans or animals by larva stage of dipterous flies (2 wing).



classification.

1] According to habitate. (Type of Tissue invade). Ext. int.

2] External Myiasis.

• Cutaneous Myiasis :- invasion of skin by larva :-

- Creeping Eruption → form tunnel under skin as Gastrophilus.
- Nodular swelling as dermatobia & cordylobia
- wound Myiasis → invade wound or ulcer as Calliphora, Lucia

"Oestrus ovis"

• Nasal Myiasis :- ^{larva} Sarcophaga & Wohlfahrtia put eggs in nasal cavity. → burrow into tissue → bone → brain meningitis → death
clinical Picture :- sneezing & epistaxis.

• Ocular Myiasis :-

→ External ophthalmomyiasis :- (Gastrophilus, Hypodermia)

adult oestrus → eye → egg → hatch → larva

→ conjunctival irritation → severe pain.

→ internal ophthalmomyiasis :-

oestrus, Gastrophilus, hypodermia involve orbit

→ destruction → loss of eye.

- **Aural myiasis**:- sever Pain accompanied by deafness and drum can be perforated as sarcophaga. Wohlfahrtia.

[b] Internal myiasis:-

- **intestinal myiasis** as *Musca*.

Clinical → dis comfort, Vomting, diarrhoea

- **Gastric myiasis** as *Cristalis*

Clinical → Vomting.

- **urogenital myiasis** as *Fannia*

Clinical → urinary tract inflammation, dysuria

[2] According to habits of fly.

- [a] **Specific**:- larva of this group are obligatory tissue parasite. Can only develop in living tissue.

→ *Gastrophilus* & *Hypodermæ*.

→

→

- [b] **Semi specific**:- The larva of this group grow on dead tissue of man and animals. but may invade neglected wounds as *Carephora*, *Lucilia*, *Sarcophaga*

- [c] **Accidental**:- larva may accidentally get in tissue when the egg are ingested accidentally. with food e.g *Prophila*

Diagnosis:-

- 1] by finding larva in the lesion. and identify the larva by its posterior spiracles.
- 2] Breeding living larva to Adult stage.

Treatment:-

- 1] by Removal of larva:-

- Manually if larva in skin, eye, nose, ear.
- Saline Purge if larva in stomach, intestine.
- by douches if larva in vagina or bladder.
- by cystoscope. in cases of urinary myiasis.

- 2] Treatment secondary infection. by Antibiotic.

Creeping myiasis.	Nodular myiasis	wound myiasis.	Nasal myiasis.
Gasterophilus.	Cordylobia	Calliphora, Lucilia	Oestrus ovis.

Aural myiasis → Wohlfahrtia.

OPThalmo myiasis interna	OPThalmo myiasis externa.
HyPOdermia	Oestrus

Gastric myiasis	intestinal myiasis	urogenital myiasis.
Eristalis.	Musca	Fannia

Nosocomial myiasis → Lucilia. ←
maggot therapy

البزاق fleas

- Temporary ecto Parasite.
- both sex are blood suckers.
- They are host specific.
- increases in ^{الربيع} spring and ^{الخريف} autumn.

Human flea "Pulex irritant"

Medical important:-

[1] Transmit Plague. (caused by *Yersinia Pestis*)

Mechanism.

infected blood → fleas in stomach →
 Multiplication → Regurgitation to mouth
 → Anterior station Transmission.

N.B Biological Propagative Transmission.

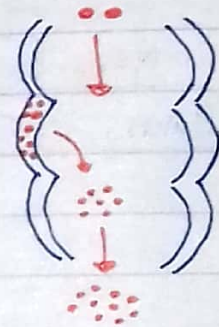


[2] Transmit Endemic Murine typhus. (caused by *Rickettsia typhi*)

Mechanism:-

infected blood → fleas in stomach →
 Epithelial lining → Multiplication.
 → Posterior station Transmission.

N.B Biological Transmission Propagative.



Mode of infection:-

1. Skin contaminated by flea faeces.
2. crushing infected flea.
3. inhalation of dried faeces.

Animals flea

- ✓ cat flea
- ✓ dog flea
- ✓ Rat flea.

Medical importance-

Animal flea act as intermediate host. of Parasitic disease.

- Rat flea act as intermediate host for H. nana & H. diminuta
- Dog, cat flea act as intermediate host for D. caninum.

Flea attacking their host (Tunga penetrans)

- * it has angular head.
- * Live in dusty soil.
- * attack human walking bare footed in dusty soil to take its blood meal.
- * it burrow in to skin of the sole of foot. or between toes. causing chiggers or jiggers disease.

Clinical → Painful nodular swelling which may ulcerate.

Treatment → Surgical removal of flea with Antibiotic.

Control of flea

Human flea.

- Application of insecticides
- Use of vacuum cleaners.

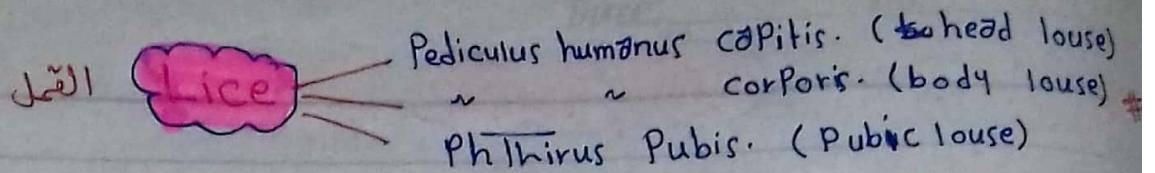
Dog & cat flea

- Dusting animals with insecticides.

Rat flea.

- Dusting flea with insecticides
- Dusting Rat holes with warfarin.
- Strict quarantine. Measure against ships comes from foreign ports.

Anoplura



Habits :-

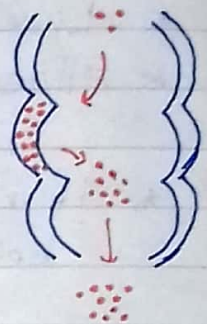
- * Permanent Ecto Parasite.
- * Spread Epidemic
- * ↑ in winter
- * Transmitted by combs, brushes, hats, clothes.

Medical important:- body louse
Transmits.

① Epidemic Typhus caused by Rickettsia prowazekii

Mechanism:-

Rickettsia → Gut → Epithelial lining.
→ Multiplication → Rupture of cell
→ Pass with faeces. (Posterior station)



Mode of infection

1. Contamination of skin wound by lice faeces
2. crushing infected lice.
3. inhalation of dried faeces.

source of epidemic infection.

1. case of Typhus from neighboring area.
2. case of Brill Zinsser disease. (Remnant of mild form of Typhus
Late Reactivated after long dormant infection. May be
30 year of 1st infection).

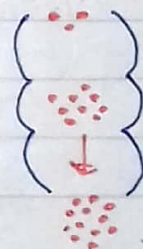
② Trench fever (5-day fever) caused by Rickettsia quintana

Mechanism of Transmission:-

Rickettsia → Gut → Multiplication.
→ Pass with faeces → Post. station

Mode:-

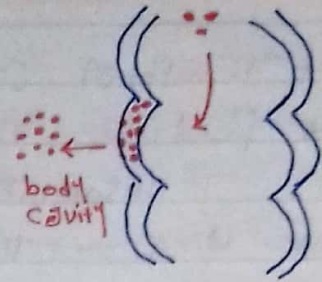
as above.



③ Epidemic Relapsing Fever caused by *Borrelia Recurrentis*

Mechanism of Transmission.

Borrelia Recurrentis → Gut →
Epithelial lining → Rupture
in body cavity.



Mode :-

only by cruching the lice.

④ Pediculosis (vag bond's disease).

occur in Person who have lice for long Time.
Skin becomes Thickend and show spots of
hyper Pigmentation.

Phthirus Pubis.

- * not Transmite any disease.
- * attached to Pubic Hair, axillary hair and eye lashes.
- * causes Blepharitis (inflammation of lid margin).

Control

Body louse.

↓
bathing and boiling
of clother

Head lous

↓
spraying of Hair
by synthetic
Pyrethrum.

Pubic louse.

- ↓
• shave Pubic, axillary
Hair
- Removal of lice
from eye lashes
by forceps.
- application of
yellow oxide of
Mercury ointme

Hemiptera

of No medical importance.

Bed Bugs

نمل السرير
bed bug

- * Temporal Ecto Parasite
- * Feed on blood by biting by night causing insomnia & nervous irritability.
- * it may act as mechanical carrier but not biological carrier.
- * Recently some evidence indicate that they may transmit H.B.V.
- * it give characteristic odour. offensive odour.
- * Mouth parts adapted for piercing and sucking.

- Control
- 1- Application of insecticides.
 - 2- Fumigation with sulfur.
 - 3- Collection and destruction of bugs.

Winged Bug

called: Cone-nosed-bug & Kissing bug & Assassin
كوسن barber's bug

القاتل

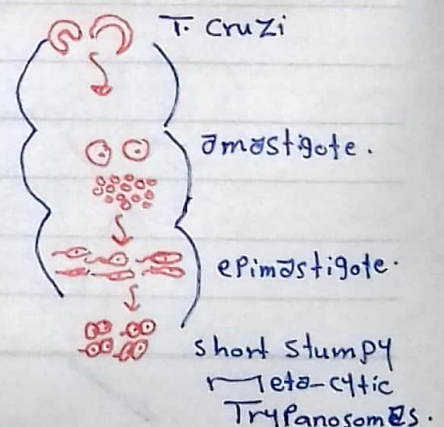
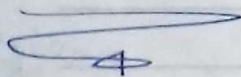
- o Temporary Ecto Parasite.
- o both nymph and adult are blood sucker.
- o Attack face with no pain.

Medical important

Transmit Trypanosoma cruzi which causes Chagas disease. (not pathogenic to man).

Mechanism

" cyclo Propagative "



Demodex folliculorum - follicle mite

Pathogenesis and clinical picture:-

- 1- They causes acne-like lesion. (black head).
- 2- May causes scaling and blepharitis.
- 3- Infection is higher in old age person and women using cleansing cream.

Diagnosis:-

Pressing the lesion and examination of exudate material microscopically.

Treatment:-

- 1- washing the face with soap and water.
- 2- lindane, 5% in vanishing cream.

Medical important of cyclops.

act as intermediate host. for.

- ✓ (1) Diphylo bothrium latum
- ✓ (2) ~ Manson
- ✓ (3) Dracunculus medinensis.



الجرب

Sarcoptes scabiei "itch mite"

Causes:- scabies

Distribution:- world wide especially among poor classes or lack of hygiene.

Pathogenesis:- (medical important) & clinical picture.

* Common Site:-

- interdigital space.
- flexor aspect of wrist
- forearm, elbow, axilla, back, inguinal region, Genitalia.

* Lesion.

- 1. Elevated Reddish Tracks in the skin with minute vesicle.
- 2. intens itching which aggravated by warmth and sweating.
- 3. causing scratching.
- 4. spread lesion and induce 2nd bacterial infection.
- 5. Multiple Papular, Vesicular, Pustular lesion.

Crusted or Norwegian scabies.

* it is sever form of scabies. in which. The Patient has Generalized. dermatitis. with Extensive. Scaling and crusting. (قشور كثيف واسع النطاق)

* It occurs in immuno deficient Patients with Hundreds of mites lesion.

- Extensive
- sever form of scabies.
- Patient has generalized dermatitis. with extensive. scaling and crusting.
- occurs in immune compromised Patient with hundreds of mites lesion.

diagnosis:-

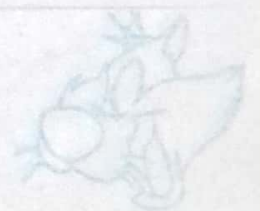
- 1] clinical Picture.
- 2] finding burrow and opening one of them to see mites.
- 3] scraping infected area with scalpel and immediately examine the obtained material after adding 10% KOH to avoid dissolving of them.
- 4] → application of mineral oil before scraping is better. This enable organism to adhere better to skin and not dissolved.

Treatment:-

- ✓ 1- Patient must take hot soapy bath using rough brush.
- ✓ 2- applying acaricide as Pyrethrum 5% cream to whole the body for 8-12 hours then washed off.
- ✓ 3- Anti Histaminic for itching.
- ✓ 4- Anti biotic for 2nd infection.
- ✓ 5- lindane 1% cream.
- ✓ 6- Benzyle benzoate 20%.

Control:-

- 1- Frequent bathing and boiling of bed linen etc.
- 2- Avoid contact with patient
- 3- ~ ~ ~ infected animals.
- 4- Treatment of patient and domestic animals.



Trombiculid mites. (scab mites)

called "chigger mites" & "Harvest mites" & "Red bugs"
Medical important :-

1] vector of scrub typhus caused by R. Tsutsugamushi

Mechanism of Transmission

✓ Trans ovarian.

✓ Transstadial.

2] Dermatitis (north America and Europe) مجرد قرص من هنتقل المراه

N.B Adult → egg → larva → nymph → Adult.

* larva attack human skin with its capitulum.

* larva secrete saliva which dissolve the skin.

To feed on Tissue fluid. (feed only once time)

* forming tube called histosiphon or stylostome.

Control :-

- ✓ 1] Personal Protection
- ✓ 2] Repellents (Diethyl Tolumid) off ← الريمبيج الشجادي
- ✓ 3] Killing free living stage. (nymph, adult).
- ✓ 4] ~ Reservoir host (Rodent)

House dust mites

House dust mites

"Dermatophagoides
farinosa"

Medical important :-

- (1) bronchial asthma especially in children.
- (2) Perennial Rhinitis :- sneezing, nasal congestion,
watery discharge, conjunctival itching.
- (3) dermatitis :- erythematous scaling.

Diagnosis :-

- (1) History taking.
- (2) Clinical examination.
- (3) determine sensitization by skin test.
- (4) Serum assays of specific IgE & IgG4 antibody.

Shant

Control :-

- (1) exclusion of dust from house holds الأدوات المنزلية
- (2) indoor humidity control تقليل الرطوبة
- (3) vacuum cleaning.
- (4) Dallergen.

مهم

- | | |
|-------------------------------|-------------------------------------|
| ✓* Pediculosis. | ✓* Medical important of Mosquito |
| ✓* Tick Paralysis | ✓* Type of biological Transmission. |
| ✓* Chigger disease. | ✓* Chagas disease "bug" |
| ✓* <i>Sarcoptes scabiei</i> . | ✓* Brill Zinsser disease "Lice" |
| ✓* Cyclops. | ✓* House dust mites . |
| ✓* Myiasis. | * |
| ✓* <i>Pediculus humanus</i> | * |
| ✓* House fly. | * |
| ✓* Sand fly. | * |
| * Mosquitoes control. | * |



Storage mites

Pests of stored food Product as flour, cereals, cheese, macaroni affect worker handling. This Product as. bakers itch & grocers itch.

1- Medical important.

- 1) Dermatitis by contact or bite of mites. it produce itching, urticaria, papular lesion of exposed part.
- 2) Digestive Tube → irritation of intestinal crypt with colic
- 3) Respiratory symptoms → Respiratory acariasis.
- 4) Allergic Conjunctivitis

Treatment

- 1) using water and vinegar
- 2) saline purge in GI
- 3) Arsenicals for Respiratory symptoms.

N.B domestic mites = house dust mites + storage mite.

acariasis

Tick Paralysis :-

- disease occurs in young children.
- occurs when hard tick injects the toxin on back of neck or along vertebral column.

Symptoms :-

- Generalized toxemia.
 - fever
 - Rapid Paralysis
 - difficult in swallowing and respiration.
- Symptom disappears following removal of tick.

"Maggot Therapy"

- Artificially induced myiasis performed in environment by experienced medical person.

- 1) Selection of suitable fly for use in maggot therapy is important to determine both safety and success of treatment.
- 2) it is important to select species that feed on necrotic tissue.
- 3) Lucilia is most important suitable species.
- 4) The larve must be maintained sterile before maggot therapy.
- 5) Maggot therapy has the following 3 effects on wound.
 - debridement (Removal of cellular debris and necrotic tissue)
 - disinfection.
 - Enhanced healing

intestinal Sporozo.

- ① cryptosporidium parvum
- ② cyclospora cayentanensis.
- ③ isospora belli

	crypto spordium-	cyclospora.	isospora.
Disease	crypto sporidiasis.	cyclosporidiasis.	isosporidiasis
G. Distrib-ution.	world wide.	world wide.	world wide.
infective stage.	Sporulated oocyst	Sporulated oocyst	Sporulated oocyst.
mode of infection	• Auto infection:- Thick walled oocyst → External auto infection. Thin walled oocyst → internal auto infection. • ingestion of contaminated food or drink.	<u>N.B</u> No auto infection Due to unsporulated oocyte. Pass in stool of patient • ingestion of contaminated vegetables, fruits.	May not auto infection → some sporulated → some unsporulated. • ingestion of contaminated food or drink.
Pathogenesis.	1- inflammatory change. villous atrophy and crypt hyperplasia. 2- in immuno compromised patient - Dissemination of parasite to other organ. as oesophagus, gall bladder, urinary bladder, Respiratory tract.	inflammatory change villous atrophy and crypt hyperplasia	inflammatory change villous atrophy and crypt hyperplasia.

	Cryptosporidium	isospo cyclo spora	isospora.
Clinical Picture.	→ in immuno competent Subject:- - Mild self-limited diarrhea lasting for 2 weeks. → in children. - Abdominal discomfort, diarrhea, Anorexia, Fever, nausea, weight loss. → in immuno compromising Patient:- - Severe diarrhea, dehydration, malabsorption.	✓	✓
diagnosis	<u>Sheet</u> 1- clinical Picture:- diarrhea. 2- laboratory:- - Stool analysis. - Simple smear. - Concentration method (sheather's sugar floating) oocyst can be detected by → staining by MZN stain → immunofluorescence assay. • intestinal biopsy. To detect parasite	1- clinical 2- laboratory. Stool examination can be examined unstained or stained with MZN	1- clinical. 2- laboratory. Stool analysis can be examined unstained or stained with MZN.

Treatment.	in immuno Competant Patient → self-limited in immuno compromised Patient ✓ Nitazoxanide. ✓ Fluid, Electrolyte Replacement.	Trimetho Prim Combined with Sulfa methoxazole. ✓	Trimetho Prim. Combined with Sulpha methoxazole. ✓
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انتشار:

Epidemiology of cryptosporidium ?

- ① cryptosporidium is Zoonotic disease. (animal disease that can transmitted to man)
- ② oocyst highly Resistant to chemicals.
- ③ auto infection.

" Microsporidia "

disease:- Microsporidiosis.

infective stage:- Spore stage.

Diagnostic stage:- Spore stage.

Mode of infection:- uncertain by

- ingestion
- ocular exposure.
- inhalation.
- sexual intercourse.

Pathogenesis and clinical pictures:-

① intestinal infection:- (intestinal microsporidiosis).

- Prolonged diarrhea.
- Malabsorption.
- dehydration.
- cholangitis and Rhinosinusitis.

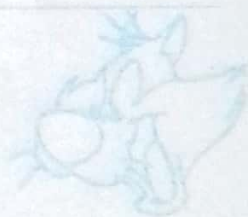
② ocular infection.

- Conjunctivitis
- Keratitis
- Corneal ulcer.

③ Generalized muscle weakness.

④ Systemic infection:-

involve intestine, biliary tract, ocular, hepatic, Renal and Respiratory system.



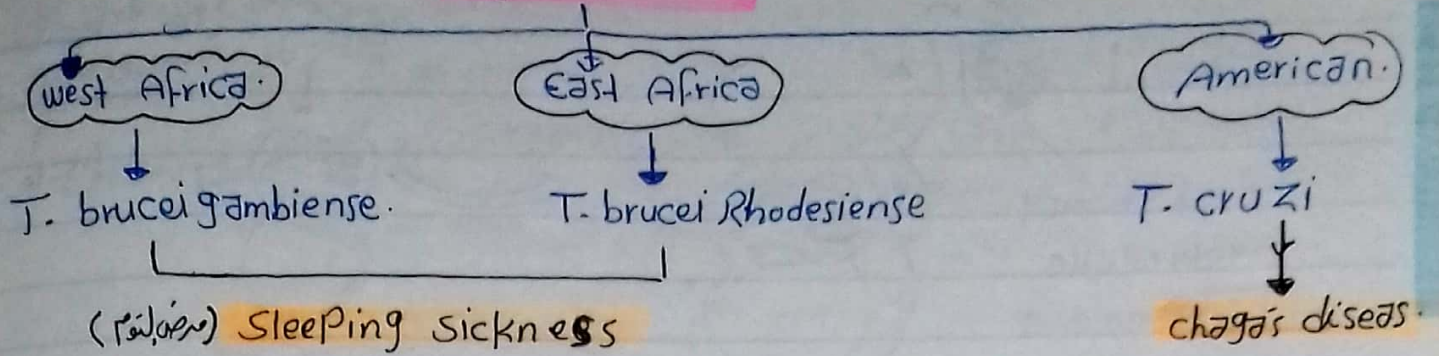
Diagnosis:-

- ✓ [1] Examination of Excreta and body fluid. to see.
The spore microscopically
- ✓ [2] Biopsy to identification of organism.
- ✓ [3] Molecular techniques.
- ✓ [4] Electron microscope to identify the ultra structure of parasite

Treatment:-

- ** Nitazoxanide → if infection in intestine.
- ** Albendazole → for disseminated infection.
- ** Topical fumagillin → in ocular lesion.

Trypanosoma



infective stage. short ^{قزمة} Stumpy metacyclic trypanosomes

Vector

Glossina palpalis

Glossina morsitans

winged bug
(Triatom)

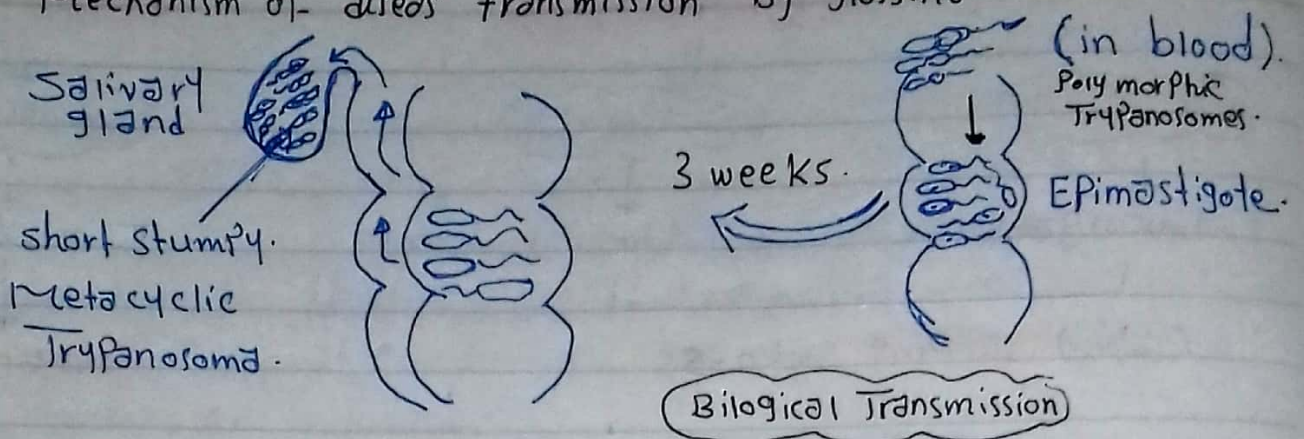
Mode of infection.

Through bite of tsetse.

Through contamination of site of bite or mucous membrane with faeces.

West Africa	East Africa
T. brucei gambiense	T. brucei Rhodesiense
less in blood	Abundant in blood
can't live in laboratory animal	Can live in laboratory animal
Naturally Present in (Reservoir host) Goats, cattle, pigs	Reservoir host wild game animals
Glossina palpalis	Glossina morsitans

Mechanism of disease transmission by Glossina.



N.B Diagnostic stage → Poly morphic trypanosomes.
 infective → short stumpy metacyclic trypanosomes.

Pathogenesis and Clinical Picture. (west Africa).

- incubation Period 2 weeks.
- Trypanosoma chancre (local inflammatory nodule at site of bite).
- invasion of lymph node. especially posterior cervical lymph node.
Sheet (Winterbottom's sign) → generalized weakness, spleno megalia, hepato megalia.
- invasion of blood → Headache, Fever, muscle pain. Joint pain, irregular erythematous rash.
- invasion of bone marrow → hypoplastic anemia.
- invasion of C.N.S → severe Headache, mental apathy. Retardation, slow speech, Tremor, involuntary movement. Convulsion, Sleeping stage, Coma, death.

In East Africa :-

- ~~try~~ Disease more rapid and fatal course.
- incubation period is short
- appear in blood early, in abundant number.
- C.N.S invasion involved early.

Diagnosis :-

1) clinically $\rightarrow$ clinical picture.

2) laboratory diagnosis :-

(a) * detection of Trypanosomes. in aspirate. from.
chancre, L.N, blood, C.S.F.

* microscopic examination. of stained or un stained film.

* Culture on suitable medium. $\rightarrow$ Epimastigote.

* Animal inoculation.

(b) Serological test :-

increases total IgM level in serum. ? due to antigenic variation.
of surface coat of the parasite.

2 week.

chancre.

invasion

L.N (winter bottom sign),

blood $\rightarrow$ Fever, Hedeck, Muscle Pain, Joint Pain, Rash.

bone marrow $\rightarrow$ hypoplastic Anemia.

C.N.S. $\rightarrow$ severe Hedeck, Tremor, Aphasia, Convulsion,
sleeping, Coma, death



Trypanosoma cruzi

distribution:- Central and South America.

diagnostic stage:- C-shaped trypanosomes.

Vector :- winged bug. (triatoma). (kissing bug)

infective stage:- short stumpy metacyclic trypanosomes.

Mode of infection:- Contamination of site of bite with faeces.

Pathogenesis and Clinical Picture:-

(A) Acute form

1. organism Prolifrate at site of infection and produce chagoma.
infi. at site of bite. ←
2. organism. Spread to Regional Lymph node. → blood → organs and tissue. Result in. fever, enlarged L.N., Spleen, liver and skin rash.
3. uni lateral edema of ^{upper, lower} eye lid with conjunctivitis
"Romanos Sign"
Due to Allergic Reaction.
To bite of winged bug.
4. in Sever infection. There are sign of meningioencephalitis and Heart failure.
5. Complication. include death, Chronicity or Recovery.

(B) Chronic form:-

- Parasite. produce antigen. Similar to Patient self Antigen.
The body produce. auto Antibody That causes. damage to
- ✓ [1] Heart and muscle fiber → change in E.C.S & signs of Heart failure
 - ✓ [2] Esophageal muscle fiber → mega esophagus and dysphagia.
 - ✓ [3] Colon muscle fiber → mega colon and constipation.
 - ✓ [4] C.N.S & Thyroid gland. → less affected.
 - ✓ [5] immuno suppression Patient Result in exacerbation of infection

Diagnosis :-

① Clinical → clinical manifestation.

② Laboratory :-

Ⓐ Finding of parasite in :-

- blood film → C-shaped trypomastigote.
- Biopsy from L.N, liver, spleen → amastigote.
- culture → epimastigote.

sheet Ⓑ Xenodiagnosis :-

(يجيب winged bug ونكون متأكدين إنها تكون clear ونسمع لها تقصص الشخص الذي شالين بنة عنده ال disease لهو حدة chagās disease هتسبب ال C-shape ال blood ونسبها developmentjes وبعد اربعين نرجعها لوقيت ال Epimastigote ديل في ان لعيان infective

laboratory bred winged bug is Allowed to Suck blood from. Patient. Then examine. The gut of bug. after. 10 day. for Trypanosomes.

✓ Ⓒ serological test.

✓ Ⓓ Cruzin test → intra dermal injection of Antigen. gives delayed. Reaction in +ve case.

✓ Ⓔ Molecular techniques as P.C.R

Treatment :

Sleeping Sickness.	chagās disease .
in early stage:- Pentamidine.	Nifurtimox.
late stage:- Tryparsamide.	or
both stage:- ornidyle.	Primquine.

1- Mosquito bionomics: Relationship between developmental stages of Mosquitoes and Their environment.

السبات الشتوي

2- Hibernation :- dormant stage that occurs in winter in which the Mosquitoes stored food and remain inactive and quiescent in dark corners.

3- Endophilic Mosquitoes :- female Mosquitoes have predilection to human blood & they hide inside houses near to source of blood.

4- Exophilic Mosquito :- female Mosquitoes which wild. outdoor feeding and ovipositing in the open and rarely enter houses.

5- Anthro-philic :- female Mosquitoes prefer human blood.

6- ~~Am~~ Zoo Philic :- female Mosquito prefer animal blood.

7. Neutrophilic mosquitoes :- female Mosquitoes prefer both human and animal blood.

8. Animal barrier :- Putting domestic animals between human and breeding site of Mosquitoes. so Mosquitoes attack animal instead of human.

9. Myiasis :- invasion of tissue of human or animal by larva stage of dipterous flies.

10. specific Myiasis :- dipterous flies larva are obligatory tissue parasite. feed only on healthy living tissues.

11- **Semispesific Myiasis**:- Dipterus flies larva feed only on dead tissues or wounds & attracted by offensive odour of wound.

12- **Naso Cornal Myiasis**:- invasion of Tissues by Dipterus flies larva affect hospitalized Patient.

13- **Maggot Therapy**:- artificially induced Myiasis. Performed in controlled Environment by Experienced Medical Practitioners.

14- **D-Allergen**:- Acridle and Allergen Reduced agent. it is applied to homes at 2-3 months interval To obtain optimum effect.

15- **Concomitant immunity**:- ^{منه} young schistosomula are killed by immune Response induced by surviving adult worm and doesn't kill adult.

16- **Strong immunity**:- immunity induced by previous infection. Result on solid immunity to Reinfection.

Ramón's Sign:-

- * Allergic Reaction to The bite of winged bug.
- * Commonest finding in chagas disease.
- * infection of eye lid resulting in uni lateral conjunctivitis and orbital edema

Xenodiagnosis:-

- * it used in diagnosis of chronic and sub acute chagas disease.
- * allowing The bug feed for 30 minute.
25-30 day later The bug are dissected and content of hind gut and Rectum are examined microscopically for Presence of Trypanosoma.